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ADVISORY COUNCIL

SUBCOMMITTEE ON MANUAL OF PROCEDURES

Thursday
May 25, 1978
10:00 A.M.

939 Ellis Street
San Francisco
California 94109

M I N U T E S

COMMITTEE MEMBERS PRESENT: Lowell V. Smith, Chairperson; Shirley J. Campbell, Joseph D. Coons.

COMMITTEE MEMBERS ABSENT: John L. Nicholson, Hiram Wolch.

STAFF MEMBERS PRESENT: Gary Bisonett, Gale Karels.

- - -

Chairperson Smith called the meeting to order at 10:00 A.M.

APPROVAL OF MINUTES OF APRIL 20, 1978

Mrs. Campbell requested the following corrections:

Page 1, under the correction to the minutes of April 20, 1978, correct the spelling of "Iverson".

Under Para. 4 - change "for" to "from".

Under 5.2 - change "for" to "of at least".

Page 2, 1.1 - to read, "...it determines..."

Page 3 - 5.12 - add: Dry test meter.

7.2.4 - to read, "Dry test meter temperature..."

Page 5 - 9.3 - to read, "Analyze and unused portion..."

Page 6 - 5.5 - to read, "...dry test meter..."

Page 7 - 8.3 - to read: "During the test sample at a constant rate of approximately 30.0 liter/Hr (1 CFH). Use the Rotameter to briefly establish the initial sampling rate. Then remove it from the system.

8.5 - to read, "Add...temperature in the final..."

The Committee approved the Minutes as corrected.

REVIEW OF INTEGRATED (ABSORPTIVE) SAMPLING PROCEDURES - ST-19B, ST-22

The Committee reviewed ST-19B--Total Sulfur Dioxide Integrated Sample, and made the following corrections thereto:

Title to read - Total Sulfur Oxides Integrated Sample

1.1 - to read, "This method is used to quantify emissions of total sulfur oxides. It determines compliance..."

2.2 - to read, "Sample gas is drawn through a 3% hydrogen peroxide solution which absorbs the total sulfur oxides..."

3.1 - to read, "The...total sulfur oxides..."

3.2 - to read, "The...total sulfur oxides..."

4. - Delete "none."

4.1 - Add: The presence of strong acids such as hydrochloric or sodium bisulfite give erroneously high results. The presence of alkaline gases or reactive basic solids, such as ammonia or calcium oxide give erroneously low results.

5.2 - Change second sentence to read, "The final..."

5.4 - to read, "An ice bath is..."

5.5 - Second sentence to read, "The pump must have..."

5.6 - to read, "Use approximately...(with a...) to insure... test meter..."

5.7 - Delete "gas".

5.9 - to read, "Use a barometer..."

5.10 - Correct the spelling of Rotameter.

6.1 - Delete.

6.2 - Change to 6.1, to read - "Hydrogen peroxide solution, 3%."

7.1 - Delete.

7.2 - Change to 7.1, to read - "Add...of two impingers."

7.3 - Change to 7.2.

7.3 - to read: Retain 100 ml of the hydrogen peroxide solution to analyze as a blank.

7.4 - Delete second sentence.

7.5 - First line to read, "Leak...starting..."
Third sentence to read, "Before stopping..."

8.1 - to read: Each test run shall consist of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or thirty minutes, whichever is less.

8.3 - Add second sentence: Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4.3 - to read: dry test meter reading

8.4.4 - Delete.

9.1 - Delete.

9.2 - Change to 9.1, to read: Immediately after each test run stopper the impingers to minimize sample losses.

9.3 - Change to 9.2 - Change "dioxide" to "oxide."

9.3 - Add.

10.1 - to read, "Determine...in accordance with ST-17."

10.2 - Change "using" to "in accordance with."

11.2 - to read, "Total Sulfur Oxide concentration:". Change C_{SO_2} to C_{SO_x}. In the third line after "concentration" add "as SO_2." In line 5, change "dioxide" to "oxides."

11.3 - to read: Mass Emission rate of SO_x:

$$M_{SO_x} = kC_{SO_x}Q_o$$

where: M_{SO_x} = mass emission rate of SO_x (as SO_2) kg/hr(lb/hr)

Q_o = stack gas flow rate $\frac{SDM^3}{min}$ $(\frac{SDFT^3}{min})$

$k = 9.92 \times 10^{-6}$ $\frac{lb}{ppm\text{-}ft^3\text{-}hr}$ for English units

$= 1.59 \times 10^{-4}$ $\frac{kg}{ppm\text{-}m^3\text{-}hr}$ for SI units

The Committee discussed Source Test Procedure ST-22, Trimethylamine, and made the following changes thereto:

1.1 - Second sentence to read, "It determines compliance..."

4. - to read None known.

5.5 - to read: "Use approximately...(with a...) to insure... dry test meter..."

5.6 - Delete "gas".

5.9 - Correct the spelling of "rotameter."

6.1 - Delete sentence beginning with "Dissolve..."

7.1 - Delete the second "the."

7.3 - Add: Retain 100 ml. of the hydrochloric acid to analyze as a .

7.3 - Delete second sentence.

7.4 - Change: "turning on" to "starting" and "turning off" to "stopping."

8.1 - Change to read: Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run of batch process operations shall be for 90% of the batch time or thirty minutes, whichever is less.

8.3 - Add: Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4.3 - To read: dry test meter reading.

8.4.4 - Delete.

9.1 - To read: Immediately after each test run stopper the impingers to minimize sample losses.

10.2 - Add, "W" to the formula after 10^3.

"Where: C_{TNA} = CTNA..."

11.1 - Change "3" to "2".

REVIEW OF CONTINUOUS INSTRUMENTAL SAMPLING AND ANALYSIS - ST-5, ST-6, ST-14, ST-19A, ST-13, ST-1A

The Committee discussed Source Test Procedure ST-5, Carbon Dioxide Continuous Sampling, and made the following changes thereto:

1.1 - Second sentence to read, "It determines compliance..."

2.1 - Second sentence to read, "The carbon dioxide concentration is determined by passing a small portion of the sample through a non-dispirive..." Delete last sentence.

3.1 - Change "depends" to "depend."

3.2 - To read: "The minimum sensitivity...shall be ± 2%..."

4.1 - To read: Possible interferences include methanol, ethanol and water.

5.1 - Delete "To determine CO_2 concentration" in first sentence. Second sentence to read, "The analyzer must be...cell-length..."

5.3 - Line 5 - Change "to aid" to "for". Third sentence to read, "The span...CO_2..." Fourth sentence to read read, "Except...all materials which come in contact with either the sample or span gases must be..."

5.4 - To read, "Use...long enough..."

5.5 - To read: "Use modified..., or equivalent."

5.8 - Change "free flow rating" to "capacity."

5.9 - Change "P.s.i.g." to "Psig".

5.11 - To read, "Use a..."

6.1 - Change "recommendations" to "instructions."

6.3 - Change "starting on" to "starting." Delete the word "sample."

6.4 - Change "recommendations" to "instructions."

6.5 - Change "recommendations" to "instructions."

6.6 - To read: "Conduct a preliminary concentration traverse (according to ST-18) to determine if stratification of the stack gases exists, if the..."

6.7 - Change "recommendations" to "instructions."

7.1 - To read: Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch process operation shall be for 90% of the batch time or thirty minutes whichever is less.

7.2 - Change "span" to "calibrate."

7.4 - To read, "Calibrate the analyser before..."

7.5 - To read: "Conduct three..."

8.1 - To read: "From the chart recording determine...run."

9.1 - To read: "Report the results indicated on Figure 2."

The Committee discussed Source Test Procedure ST-6, Carbon Monoxide Continuous Sampling, and made the following changes thereto:

1.1 - Second sentence to read: "It determines..."

2.2 - Second sentence to read: "The carbon monoxide concentration is determined by passing a small...non-dispirsive...radiation." Delete third sentence.

3.2 - To read: The minimum sensitivity...shall be ± 2%.

5.1 - To read: "Use a...equivalent." The analyser must be equipped...cell-length..."

5.3 - Sentence 3 to read: "The zero air system provides a clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of CO for use in calibrating the analyser. Except as specified, all materials which come in contact with either the sample or span contacting surfaces must be constructed of Teflon or stainless steel."

5.4 - To read: "Use a...long enough to..."

5.5 - To read: Use...(four inches), or equivalent."

5.8 - Change "free-flow rating" to "capacity."

5.9 - Change "P.s.i.g." to "Psig".

5.11 - Change to "Use a..."

6.1 - Change "recommendations" to "instructions".

6.3 - Change "turning on" to "starting". Delete "sample."

6.4.- Change "recommendations" to "instructions".

6.6 - To read: "Conduct a preliminary concentration (according to ST-18) to determine if stratification of the stack gases exists. If the CO..."

6.7 - Change "recommendations" to "instructions".

7.1 - To read: Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch process operation shall be for ninety percent of the batch time or thirty minutes, whichever is less.

7.2 - Change "span" to "calibrate".

7.4 - To read: "Calibrate the analys before..."

7.5 - To read: "Conduct three..."

8.1 - To read: From the chart recording determine...run.

9.1 - To read: Report the results indicated on Figure 2.

The Committee discussed source test procedure ST-14, oxygen continuous sampling, and made the following changes thereto:

1.1 - Second sentence to read: "It determines compliance..."

3.3 - To read: "The...O_2 analyser shall be ± 2%..."

5.1 - Capitalize "Analytical Instruments"; change "of" to "for". Delete "to determine O_2 concentrations."

5.3 - Second sentence to read "The sample...for instrument calibration." Delete Sentence 3. Change Sentence 4 to read: "Except...materials which come in contact with either the sample or span should be..."

5.4 - To read: "Use...long enough to..."

5.5 - To read: "Use..., or equivalent." Delete second sentence.

5.8 - Change "free-flow rating" to "capacity".

5.9 - Change "P.s.i.g." to "Psig".

6.1 - Change "recommendations" to "instructions".

6.3 - Change "starting on" to "starting". Delete "sample."

6.4.- Change "recommendations" to "instructions".

6.6 - To read: "Conduct a preliminary concentration traverse (according to ST-18) to determine...exists. If the..."

7.1 - Change to read: Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch process operation shall be for ninety percent of the batch time or thirty minutes, whichever is less.

The Committee discussed Source Test Procedure ST-19A, Sulfur Dioxide, Continuous Sampling, and made the following changes thereto:

2.1 - Second sentence to read: The sulfur dioxide concentration is determined by passing a...analyser."

3.2 - To read: "The minimum sensitivity...shall be ± 2%..."

5.1 - Delete, "to determine SO_2 concentrations."

5.3 - Line 5 change "to aid in" to "for". Change "span gas" to "SO_2". Sentence 5 to read: "Except as specified all materials which come in contact with either the sample or span gases be..."

5.4 - Change "of sufficient length" to "long enough".

5.5 - Change to read, "Use modified..., or equivalent."

5.8 - Change "free flow rating" to "capacity".

6.1 - Change "recommendations" to "instructions".

6.3 - Delete "sample".

6.4 - Change "recommendations" to "instructions".

6.5 - Change "recommendations" to "instructions".

6.6 - Change to read: Conduct a preliminary concentration traverse (according to ST-18) to determine exists." Delete the second sentence.

7.1 - Change to read: Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run of batch process operations shall be for 90% of the batch time or thirty minutes whichever is less.

7.4 - Change to read, "Calibrate the analyser before..."

7.5 - Change to read "Conduct three..."

9.1 - Change to read, "From the chart recording determine the ...run."

The Committee discussed Source Test Procedure ST-13A, Oxides of Nitrogen, Continuous Sampling, and made the following changes thereto:

3.2 - To read, "The minimum sensitivity...shall be ± 2%..."

5.1 - Delete "to determine NOx concentrations".

5.3 - Line 5, Change "to aid in" to "for". In line 6 change "span gas" to "no". Change sentence 5 to read, "Except... materials which come in contact with either the sample or span gas must be..."

5.4 - Change "of sufficient length" to "long enough".

5.5 - Change to read, "Use..., or equivalent."

5.8 - Change "free-flow rating" to "capacity".

5.11 - Change to read: "Use a high..."

6.1 - Change "recommendations" to "instructions".

6.3 - Delete "sample".

6.4 - Change "recommendations" to "instructions".

6.5 - Change "recommendations" to "instructions".

6.6 - Change to read: "Conduct a preliminary concentration... exists. If the..."

6.7 - Change "recommendations" to "instructions".

7.2 - Change "span" to "calibrate".

7.4 - Change to read, "Calibrate the analyser before..."

7.5 - Change to read, "Conduct three..."

8.1 - Change to read, "Determine NO_x run in accordance with..."

9.2 - To read: "Concentration of nitrogen oxides corrected to three percent oxygen." In the formula--Line 1--change "C_{NO}" to "C_{NO_x}"; in line 4 change "C_{NO}" to "C_{NO_x}".

The Committee discussed Source Test Procedure ST-1A, Ammonia Continuous Sampling, and made the following corrections thereto:

1.1 - Change "carbon dioxide" to "ammonia".

3.2 - To read: "The minimum sensitivity...shall be ± 2%..."

5.1 - Delete "to determine NH_3 concentrations".

5.3 - Line 5 - Change "to aid in" to "for". In line 6 change "span gas" to "nitrogen dioxide". Change sentence 5 to read, "except...all materials which come in contact with either the sample or span gases... steel."

5.4 - Change "of sufficient length" to "long enough".

5.5 - Change to read, "Use..., or equivalent."

5.8 - Change "free flow rating" to "capacity".

5.11 - Change to read, "Use a high...of NO_2..."

6.1 - Change "recommendations" to "instructions".

6.3 - Change "turning on" to "starting". Delete "sample".

6.4 - Change "recommendations" to "instructions".

6.5 - Change "recommendations" to "instructions".

6.6 - Change to read, "Conduct a preliminary concentration traverse (according to ST-18) to...exists. If the..."

6.7 - Change "recommendations" to "instructions".

7.1 - Change to read: "Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run of batch process operations shall be for 90% of the batch time or thirty minutes whichever is less."

7.2 - Change "span" to "calibrate".

7.4 - To read: "Calibrate the analyser before..."

7.5 - Change to read: "Conduct three..."

8.k - Change to 8.1 - to read, "From the chart recording determine...run."

9.1 - To read: "Report the results indicated on Figure 2."

The Committee discussed Source Test Procedure ST-20, Sulfur Dioxide, Sulfur Trioxide, Acid Mist, and made the following changes thereto:

1.1 - Change second sentence to read: "It determines compliance... and..."

2.1 - Correct the spelling of trioxide.

3. - Delete "and Sensitivity".

3.1.1 - Change to read ".0002 gr./... as H_2SO_4".

3.3 - Delete.

4.1 - Change to read: "Acid Mist and Sulfur Dioxide. The presence of strong acids such as hydrochloric acid or sodium bisulfite give erroneously high results. The presence of alkaline gases or reactive basic solids, such as ammonia or calcium oxide give erroneously low results."

4.2 - Line 3, change "IPS" to "IPA".

4.3 - Delete.

5.1 - Capitalize "Probe". Change "sufficiently long" to "long enough".

5.2 - Capitalize "Acid".

5.3 - Capitalize "Condensers."

5.4 - Capitalize "Filter," and change to read, "Approximately... quartz or quartz wool..."

5.5 - Capitalize "Cooling".

5.6 - Capitalize "Sample".

5.7 - Capitzlie "Silica," and change to read, "Use approximately... (with a Drierite indicator) to insure...test meter..."

5.8 - Capitalize "Dry".

5.9 - Capitalize "Connections".

5.10 - Capitalize "Barometer". Change to read, "Use a barometer that is accurate..."

5.11 - Correct the spelling of "Rotameter".

6.1 - Add: Isopropanol, 80%.

6.2 - Add: Hydrogen Peroxide, 3%.

7.4 - To read: "Retain 100 ml of each solution to analyze as a blank."

7.4 - Change to 7.5; delete second sentence.

7.6 - To read: "If condensation is expected, heat trace the sample line."

7.7 - Change 7.5 to 7.7. Change "turning on" to "starting". Change "turning off" to "stopping".

8.5.3 - Change to read "dry test meter reading".

8.5.4 - Delete.

8.7 - Change to read: "Add...the temperature exiting the last impinger at..."

10.1 - Change "using" to "in accordance with".

10.2 - Change "using" to "in accordance with".

11.1 - Delete "shall be calculated as" in line 1, to read "The standard sample volume:". In line 4, where V_o is defined, add "@ 70°F and 29.92 in. Hg". Still below the formula, after definition of the last term, P_b, add: "17.71 = a constant correcting to standard conditions".

11.2 - In the formula, add "15.4 = correction from grams to grains".

11.5 - Change "emissions" to "concentration".

11.6 - To read, "The concentration of sulfur dioxide:"

In the formula, change "C_{SO_3}" to "C_{SO_2}".

Add to the formula: "1.33×10^4 = a constant derived from the molar volume and molecular weight of SO_2."

11.7 - Correct the spelling of "sample".

11.8 - Change to read:

" Mass emission rate of SO_2:

$$M_{SO_2} = kC_{SO_2}Q_o$$

where: M_{SO_2} = mass emission rate of SO_2 kg/hr (lb/hr)

Q_o = stack gas flow rate SDM^3/min ($SDFT^3/min$)

$k = 9.92 \times 10^{-6} \frac{lb}{ppm\text{-}ft^3\text{-}hr}$ for English units

$= 1.59 \times 10^{-4} \frac{kg}{ppm\text{-}m^3\text{-}hr}$ for SI units ".

A letter from Jud Albertson
Technical Director
Chemecology Corporation
dated May 15, 1978 was presented to the Committee in connection with ST-20.

TIME AND PLACE OF NEXT MEETING

10:00 a.m., Wednesday, July 12, 1978, 939 Ellis Street, San Francisco, California.

The meeting adjourned at 2:00 p.m.

Respectfully submitted,

Mabel Harder
Secretary

MH:jl

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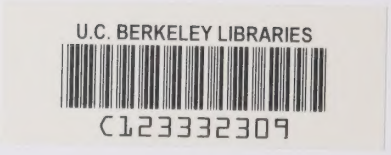

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